

**EPA Superfund  
Record of Decision:**

**ELLSWORTH AIR FORCE BASE  
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OU 06  
ELLSWORTH AFB, SD  
10/18/1995**

Final

Record of Decision for  
Remedial Action at Operable Unit 6  
Ellsworth Air Force Base, South Dakota

United States Air Force  
Air Combat Command  
Ellsworth Air Force Base

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## **1.0 DECLARATION FOR THE RECORD OF DECISION**

### **1.1 SITE NAME AND LOCATION**

Operable Unit (OU-6), Landfill No. 5 Area, Ellsworth Air Force (EAFB), National Priorities List Site. Meade and Pennington Counties, South Dakota

### **1.2 STATEMENT OF BASIS AND PURPOSE**

This decision document describes EAFB's selected remedial action for Operable Unit 6 (OU-6), in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

This decision is based on the contents of the Administrative Record for OU-6, EAFB. The US Environmental Protection Agency (EPA) and the South Dakota Department of Environment and Natural Resources (SDDENR) concur with the selected remedial action.

### **1.3 ASSESSMENT OF THE SITE**

Actual or threatened releases of hazardous substances from OU-6, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

### **1.4 DESCRIPTION OF SELECTED REMEDY**

Twelve potentially contaminated areas, or operable units, have been identified at EAFB. This ROD is for a remedial action at OU-6 and is the third ROD for EAFB.

The selected alternative, capping, includes the following major components:

- Placing a soil cover capable of sustaining perennial vegetation, over the landfill area;
- Modification of storm-water discharge point and drainage;
- Institutional controls for the landfill area;
- Long-term ground-water, surface-water, and sediment monitoring; and,
- Long-term maintenance of soil cover.

### **1.5 STATUTORY DETERMINATION**

The selected remedy is protective of human health and the environment, complies with Federal and the State of South Dakota requirements that are legally applicable or relevant and appropriate to the remedial action and is cost-effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies, to the maximum extent practicable for OU-6. However, because treatment of the principal threats of the OU was not found to be practicable, this remedy does not satisfy the statutory preference for treatment as a principal element. The size of the landfill and the fact that there are no apparent on-site hot spots that represent major sources of contamination preclude a remedy in which contaminants could be excavated and treated effectively.

Because this remedy will result in hazardous substances remaining on-site beneath the landfill cap area at low levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

#### 1.6 SIGNATURE AND AGENCY CONCURRENCE ON THE REMEDY

<IMG SRC 0896114>

THAD A. WOLFE

Date

Lieutenant General, USAF

Vice Commander

MAX H. DODSON

Date

Assistant Regional Administrator

Office of Ecosystems Protection and Remediation

US Environmental Protection Agency Region VIII

NETTIE H. MYERS, Secretary

Date

Department of Environmental and Natural Resources

State of South Dakota

## 2.0 DECISION SUMMARY

### 2.1 SITE NAME AND LOCATION

EAFB is a U.S. Air Force Combat Command (ACC) installation located 12 miles east of Rapid City, South Dakota, and adjacent to the small community of Box Elder (Figure 2-1).

EAFB covers approximately 4,858 acres within Meade and Pennington counties and includes runways and airfield operations, industrial areas, and housing and recreational facilities (Figure 2-2). Open land, containing a few private residencies, lies adjacent to EAFB on the north, south, and west, while residential and commercial areas lie to the east of the Base.

### 2.2 OPERABLE UNIT 6 (OU-6) DESCRIPTION/HISTORY AND REGULATORY OVERSIGHT ACTIVITIES

#### 2.2.1 Description/History

Ellsworth Air Force Base (EAFB) was officially activated in July 1942 as the Rapid City Army Air Base, a training facility for B-17 bomber crews. It became a permanent facility in 1948 with the 28<sup>th</sup> Strategic Reconnaissance Wing as its host unit. Historically, EAFB has been the headquarters of operations for a variety of aircraft, as well as the Titan I Intercontinental Ballistic Missile, and the Minuteman I and Minuteman II missile systems. The Air Force has provided support, training, maintenance, and/or testing facilities. Presently, the 28th Bombardment Wing (B-1B bombers) and the 99th Tactics and Training Wing are the host units of EAFB.

Environmental investigation activities at EAFB were initiated by the Air Force in 1985 through an Installation Restoration Program (IRP) Phase I Installation Assessment/Records Search and Phase II, Confirmation/Quantification. The Phase I study, dated September, 1985, identified a total of 17 locations at EAFB where releases involving hazardous substances potentially occurred.

In Phase II, of the IRP investigation, field activities included soil vapor surveys, geophysical surveys, surface and subsurface soil sampling, ground-water sampling, ground-water hydrologic testing, and ecological investigations.

OU-6 consists of Landfill No. 5 which is approximately seven acres in size and is located in the southeastern corner of EAFB (Figure 2-3). The landfill was active from 1960 to 1980 and was primarily used to dispose of construction and demolition debris. Disposal of household waste, shop waste, and wastewater treatment plant (WWTP) sludge may have taken place. However, no direct physical evidence of household or hazardous/industrial waste disposal was found at OU-6 during the 1993 remedial investigation (RI) field activities. In the past, the OU-6 area was used to stockpile digested wastewater treatment plant sludge prior to removal by contractors. Portions of the landfill have been covered, graded, and vegetated. The southern and eastern portions of OU-6 are currently part of the EAFB golf course.

Aerial photo analysis conducted by the United States Environmental Protection Agency (EPA) from historical photos (1938 to 1990) indicated the types of disposal practices at OU-6. Through interpretation of these photographs, landfill materials appear to have been placed in the area north of the east-west drainage indicated of Figure 2-3. A small building was present in this area at one time, but has since been removed. Construction and demolition debris material may have been placed along the railroad embankment on the west side of OU-6. Three small depressions identified on aerial photos and pre-1984 topographic maps may indicate borrowing activities at OU-6. Utility maps indicate two storm drain pipes terminating in the landfill. One storm drain discharge into the largest of the borrow pits. According to EAFB grounds personnel, this pipe was disconnected from service but never removed. The second storm drain is active and collects runoff from the fuel storage area west of OU-6.

The topography at OU-6 is characterized by an east-west drainage in the southern portion of OU-6 and a north-south stream in the eastern portion of the OU. The drainageway and stream areas both contain wetlands which are illustrated on Figure 2-4.

The shallow aquifer at EAFB is considered a potential drinking water source and possibly discharges to the surface. The ground water is classified as having a beneficial use as a drinking water supply suitable for human consumption (S.D. Chapter 74:03:15, Groundwater Quality Standards).

Deeper bedrock aquifers also exist beneath EAFB. These deeper aquifers are separated from the shallow aquifer by 800 feet of impermeable clays and silts. In the past, EAFB utilized these deeper aquifers for its water supply. Presently, EAFB obtains its potable water from the Rapid City Municipal Distribution System.

## 2.2.2 Regulatory Oversight Activities

On August 30, 1990 (55 Federal Register 35509), EAFB was listed on the U.S. EPA's National Priorities List (NPL). A Federal Facilities Agreement (FFA) was signed in January 1992 by the Air Force, EPA, and the State of South Dakota (State) and went into effect on April 1, 1992. The FFA establishes a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions for EAFB in accordance with the Comprehensive Environmental Response, Compensation, and Liabilities Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). It also states the oversight procedures for EPA and the State to ensure Air Force compliance with the specific requirements. The FFA identified 11 potential source-area operable units as well as a Base-wide ground-water operable unit.

Listing on the NPL and execution of the FFA required the U.S. Air Force to perform a remedial investigation/feasibility study (RI/FS) to investigate the 12 operable units. In 1993 and 1994, an extensive RI field program was conducted to characterize conditions at OU-6. The program included completion of boreholes, installation of monitoring wells, geotechnical analysis of soil samples, ecological evaluation, assessment of human health risks, and review and compilation of previous IRP investigations. Collection and laboratory analysis of soil, ground-water, surface-water, and sediment samples were included in the RI field program.

## 2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION

Community relations activities that have taken place at EAFB to date include:

- FFA process. After preparation of the FFA by the USAF, EPA, and SDDENR, the document was published for comment. The FFA became effective April 1, 1992.
- Administrative Record. An Administrative Record for information was established in Building 8203 at EAFB. The Administrative Record contains information used to support USAF decision-making. All the documents in the Administrative Record are available to the public.
- Information repositories. An Administrative Record outline is located at the Rapid City Library (public repository).
- Community Relations Plan (CRP). The CRP was prepared and has been accepted by EPA and the State of South Dakota and is currently being carried out. An update to this plan will be prepared in 1995.
- Restoration Advisory Board (RAB). The RAB has been formed to facilitate public input in the cleanup and meets quarterly. In addition to USAF, EPA, and South Dakota oversight personnel, the RAB includes community leaders and local representatives from the surrounding area.
- Mailing list. A mailing list of all interested parties in the community is maintained by EAFB and updated regularly.
- Fact sheet. A fact sheet describing the status of the IRP at EAFB was distributed to the mailing list addressees in 1992.
- Open house. An informational meeting on the status of the IRP and other environmental efforts at EAFB was held on May 6, 1993.
- Newspaper articles. Articles have been written for the base newspaper regarding IRP activity.
- Proposed Plan. The proposed plan on this action was distributed to the mailing list addressees for their comments.

A public comment period was held from July 6 to August 5, 1995, and a public meeting was held on July 25, 1995. At this meeting, representatives from EAFB answered questions about the remedial action. A response to the comments received during this period is included in the Responsiveness Summary, which is part of this Record of Decision (ROD).

This ROD is based on the contents of the Administrative Record for OU-6, in accordance with the CERCLA, as amended by SARA, and the NCP. The RI/FS reports and the Proposed Plan for OU-6 provide information about OU-6 and the selected remedy. These documents are available at the Information Repositories at EAFB and the Rapid City Public Library.

## **2.4 SCOPE AND ROLE OF RESPONSE ACTION**

The FFA identified 11 potential source area operable units (OUs) as well as a Base-wide ground-water operable unit. The 12 operable units are identified as follows:

OU-1	Fire Protection Training Area
OU-2	Landfills Nos. 1 and 6
OU-3	Landfill No. 2
OU-4	Landfill No. 3
OU-5	Landfill No. 4
OU-6	Landfill No. 5
OU-7	Weapons Storage Area
OU-8	Explosive Ordnance Disposal Area (Pramitol Spill)
OU-9	Old Auto Hobby Shop Area
OU-10	North Hanger Complex
OU-11	Base-wide Ground Water
OU-12	Hardfill No. 1

This ROD is to document the selected remedy for the preferred remedial action (RA) at OU-6 and is the third ROD for EAFB. The remedial action objectives (RAOs) are to reduce the potential risks posed by contaminants in surface soils and to reduce the mobility of potential contaminants in the landfill through containment.

The development of alternatives for the landfill was conducted under EPA's Presumptive Remedies Approach [Presumptive Remedies: Policy and Procedures (EPA 1993a); Presumptive Remedy for CERCLA Municipal Landfill Sites (EPA 1993b)]. By using this approach, selecting an alternative for remediation is streamlined by using preferred technologies based on historical patterns of remedy selection and EPA's scientific and engineering evaluation of performance data on technology implementation.

The presumptive remedy stipulates containment as the appropriate remedy for landfills. The response action, containment by capping, would remove risk associated with the ingestion, dermal contact, and inhalation exposure pathways. The area of attainment defines the area over which preliminary remediation goals would be achieved, and is based on the RAOs. The area of attainment would include landfill areas not meeting appropriate closure standards. No consideration of leachate or gas production was addressed, since identified wastes placed in the landfill are not likely to produce significant amounts of gas, or does the waste typify that which would normally be associated with leachate production. Furthermore, sample results indicate ground water has not been impacted by leachate.

## **2.5 SITE CHARACTERISTICS**

This section describes the presence and distribution of contaminants at OU-6 as a result of past activities.

### **2.5.1 Soils**

#### **Polynuclear Aromatic Hydrocarbons (PAHs)**

PAHs were reported in several surface soil samples and in one subsurface soil sample. No specific pattern of PAH contamination exists in the surface soil. The subsurface soil contamination is believed to be associated with asphalt material found in the landfill during the RI. Because of uncertainties associated with characterizing the contents of landfills, the PAHs were evaluated in the risk assessment.

#### **Pesticides**

Low concentrations of pesticides were reported in many of the surface soil samples, but in only one subsurface sample. The pesticides are from past pesticide application practices at EAFB, not from the landfill activities. Supporting this conclusion is that the ground water beneath and downgradient of the landfill did not contain pesticides. Had pesticides been leached from the landfill, the ground water would have contained the contaminants.



## Inorganic Contaminants

The concentrations of several inorganic compounds in the soil exist at levels above background concentrations. This may be due to a combination of the landfill activities and variations in the concentrations of naturally-occurring compounds in the soil. No specific pattern of inorganic contamination exists in the soil. The risk assessment indicated that no unacceptable risk exists for these inorganic compounds.

### 2.5.2 Sediment

#### Organic Contaminants

Organic contaminants reported in sediment samples include volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs) and pesticides. Sample results from certain locations indicate that the detected contaminants originated from surface water runoff from other areas of EAFB and are not a result of the landfill activities. However, these contaminants were still evaluated in the risk assessment.

#### Inorganic Contaminants

Inorganic compounds were detected in the sediment samples from the drainageways. Arsenic and other inorganic compounds are within the range of naturally occurring concentrations. However, due to the uncertainties in determining the contents of landfills, the inorganic compounds were also evaluated in the risk assessment.

### 2.5.3 Ground Water

Ground water sample results do not indicate any discernable ground water contamination at OU-6. Low levels of certain contaminants were intermittently detected in ground water samples from isolated areas.

#### Organic Contaminants

One sample from a well upgradient of the landfill contained trichloroethylene (TCE), a commonly used solvent, at 5 micrograms per liter ( $\mu\text{g/L}$ ); however, TCE was not detected in ground water samples from beneath or downgradient of the landfill. Chrysene, a component of jet fuel, was detected in one sample at a concentration of 2  $\mu\text{g/L}$ . Chrysene was not detected in any other ground-water sample. The TCE detected in the upgradient well will be further investigated during the OU-11 Basewide ground water investigation.

#### Inorganic Contaminants

Inorganic compounds were detected in ground water samples, but at concentrations within the range of naturally occurring characteristics. However, because of uncertainties associated in determining the natural characteristics, zinc and lead were evaluated in the risk assessment.

### 2.5.4 Surface Water

#### Organic Contaminants

Several organic contaminants were detected in surface water samples taken from the drainageways. In the surrounding surface soil samples, these same contaminants were either not detected or were detected at very low concentrations. Based on this and the surface water sampling locations, the majority of the surface water contaminants are from storm water runoff from the refueling area, upgradient of OU-6. The contaminants were evaluated in the risk assessment to facilitate the investigations of the sources of the surface water contamination.

#### Inorganic Contaminants

Several inorganic compounds were detected in the surface water samples. The concentrations of these compounds are within the range of naturally occurring characteristics. However, due to uncertainties associated with determining the natural characteristics, these compounds were still evaluated in the risk assessment.

## 2.6 SITE RISK SUMMARY

### Human Health Risks

The assessment of human health risks for this OU considered the following topics:

- (1) Contaminants of concern (COCs) in ground-water, surface water, sediment, and soil samples taken at OU-6;
- (2) Current and future land-use conditions;
- (3) Potential environmental pathways by which populations might be exposed;
- (4) Estimated exposure point concentrations of COCs;
- (5) Estimated intake levels of the COCs;
- (6) Toxicity of the COCs; and
- (7) Uncertainties in the assessments of exposure, toxicity, and general risks.

Noncarcinogenic and carcinogenic risks were calculated for the following five potential exposure groups:

- (1) Current EAFB maintenance personnel mowing grass on-site;
- (2) The future child/adult living on-site who ingests surface soil;
- (3) The future adult living on-site who ingests and showers with shallow ground water;
- (4) Future adolescents who are exposed to surface water and sediment through wading; and,
- (5) Future adult construction workers who excavate on-site for building residences.

Due to the heterogeneity of the waste materials present within the landfill, a complete characterization of waste materials present was not possible during the RI. This adds a degree of uncertainty to the risk assessment for the landfill contents. Rather than attempting to fully characterize landfill contents and gain more certainty in the risk assessment for the landfill contents, the Air Force utilize guidance developed by EPA titled Presumptive Remedy for CERCLA Municipal Landfill Sites (EPA 540-F-93-035). The presumptive remedy for landfills is containment (capping) of landfill contents. Using the presumptive remedy strategy, a quantitative risk assessment is not necessary to evaluate whether the containment remedy addresses all exposure pathways can be identified using the conceptual site model and compared to the pathways addressed by the presumptive remedy. Containment of the landfill contents addresses exposure pathways and risks normally associated with landfills. The contaminant exposure pathways for the potential risks at OU-6 include (1) direct physical contact with the landfill contents and (2) consumption or contact with ground water that may become contaminated.

A quantitative risk assessment was performed for the ground water, surface water, soil, sediment, and air. The risk assessment evaluated potential effects on human health posed by exposure to contaminants within OU-6. Carcinogenic risks were estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a potential cancer causing chemical. The acceptable risk range expressed as a probability is one cancer incident in one-hundred thousand people to one cancer incident in a million people. This level of risk is also denoted by  $1 \times 10^{-4}$  to  $1 \times 10^{-6}$ . Risks within the acceptable risk range may or may not warrant remedial action depending upon site-specific circumstances. Risks below this range cannot be differentiated from the background occurrence of cancer in human populations. Risks calculated in a risk assessment are potential risks and are excess (i.e., over background) cancer risks due to exposure from contaminants at the OU.

The risk assessment for OU-6 indicated that the total site risk is within the acceptable risk range. Part of the total site risk includes risk from exposure to surface soil contaminants from within the landfill. The chemicals which contributed the majority of the risk in the soil were PAHs and manganese. Benzo(a)pyrene (a PAH) is one of the primary contaminants identified in the risk assessment. However, only three of the eleven surface soil samples actually contained concentrations of benzo(a)pyrene that are of concern. Manganese was higher than background samples as a result of variations in soil mineralogy. However, due to the heterogeneity of the landfill contents, great uncertainty is associated with the calculated risk values for the surface soil. Remedial action is warranted for the landfill based on the uncertainty in characterizing the contents. The presumptive remedy as stated above was used

as a guide to determine the appropriate remedial action.

Arsenic in the sediment of the drainage areas also contributed to the total site risk. The highest concentration of arsenic in sediment was associated with a sample from a depression in the southern drainage. It is typical for naturally occurring compounds to settle or become trapped in depression areas of drainage areas. The arsenic in the sediment is not associated with the landfill. Remedial action for the drainage areas outside of the landfill boundary is not warranted.

Results of the risk assessment indicated shallow ground water and surface water were not media of current concern. Therefore, remedial action is not warranted for the ground water and surface water at this time. The ground water at OU-6 will still be part of the Base-wide ground water evaluation for OU-11.

#### Ecological Risks

An ecological risk evaluation of OU-6 was based on a combination of data and literature reviews, field and laboratory analyses, analyte evaluation and screening, and preliminary risk screening. The pertinent findings are summarized below.

A variety of animal species may live, forage, or nest in OU-6 habitats, particularly in the drainage channels. These species include various types of invertebrates, amphibians, birds, and mammals.

Because of the altered natural environment at OU-6, rare, threatened, or endangered species are unlikely to utilize the area for more than brief, periodic habitat.

Terrestrial vegetation and soil faunal communities do not reveal characteristics that indicate chemical-related impacts. This finding is consistent with the relatively low levels of contaminants in the soil.

Findings of the RI indicate that the contaminants at OU-6 are not altering the ecology to noticeable levels. A Base-wide ecological risk assessment will be conducted as part of OU-11, and OU-6 will be included in this Base-wide evaluation.

## **2.7 DESCRIPTION OF ALTERNATIVES**

Presumptive Remedy for CERCLA Municipal Landfill Sites. (OSWER Directive 9355.3-11FS) was the basis for the abbreviated feasibility study (FS). The OSWER directive established containment of the contamination within the landfill and the collection and treatment of landfill gas and contaminated ground water within the landfill boundary as the presumptive remedy for CERCLA municipal landfills.

Although not specifically identified as a municipal landfill, OU-6 exhibits characteristics that make this presumptive remedy applicable. The landfill contents at OU-6 do not have the characteristics to produce any significant leachate or gas. The risk assessment did not identify the ground water as a pathway of concern. Even though the landfill contents were not identified as a source of unacceptable risk to human health, the heterogeneity of the landfill contents causes uncertainties in the risk assessment. Therefore, the presumptive remedy focuses on containment of the landfill contents.

### **Alternative 1**

- No action
- The no action alternative represents the baseline condition at OU-6 and refers to taking no further action at OU-6 other than monitoring of sediment, surface water, and ground water.

### **Alternative 2 - Institutional Controls**

- Institutional controls (access restrictions and deed restrictions).
- Monitoring of ground water, surface water, and sediment.
- Long-term maintenance of existing soil cover.

### **Alternative 3 - Capping**

- Monitoring and institutional controls as stated in Alternative 2.
- Place soil cover capable of sustaining vegetation on the area of attainment at the landfill.

- Modification of storm-water discharge point and drainage.
- Long-term maintenance of soil cover.

## **2.8 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES**

The analysis of alternatives coupled with the use of the presumptive remedy combine for a narrower range of feasible approaches to address remedial activities at OU-6.

The remedial action objectives for OU-6 are as follows:

### **Landfill**

- Prevent dermal contact and ingestion of surface soils within OU-6.
- Reduce the mobility of potential contaminants in the landfill.

### **Sediment**

- Prevent the ingestion of sediments within OU-6.

The area of attainment is defined as the area which will achieve the remedial action objectives after remediation is completed. The area of attainment for OU-6 is the extent of Landfill No. 5 which is approximately seven acres in size (Figure 2-5).

Pursuant to Section 300.430(e)(9)(iii) of the EPA's revised National Contingency Plan, the remedial action to be implemented should be selected based upon consideration of nine evaluation criteria. These criteria are as follows:

1. Overall protection of human health and environment.
2. Compliance with applicable or relevant and appropriate requirements (ARARs).
3. Long-term effectiveness and permanence.
4. Reduction of toxicity, mobility, or volume of contamination.
5. Short-term effectiveness.
6. Implementability.
7. Cost.
8. State acceptance.
9. Community acceptance.

The following sections provide a brief review and comparison of the remedial alternatives according to the EPA's evaluation criteria.

### **2.8.1 Overall Protection of Human Health and the Environment**

The assessment of this criterion considers how the alternatives achieve and maintain protection of human health and the environment.

Alternative 1 (no action) does nothing to reduce risk at OU-6. While the risk did indicate risk associated primarily with PAHs, the levels of PAHs are within those of anthropogenic levels of other industrial and agricultural areas. Alternative 2 (Industrial Controls) provides for care of the OU through maintenance of erosional and/or non-vegetated areas. Access restrictions would reduce risk by reducing exposure. Alternative 3 (Capping) provides containment (cover) of the surface soil and the landfill contents. This would eliminate risk associated with exposure to soil and the future risk associated with potentially contaminated ground water. Alternative 3 also includes repair and extension of an existing stormwater drain and relocation of the east to west drainageway which will result in reduced surface water impacts to sediment within the OU.

### **2.8.2 Compliance with ARARs**

Alternatives are assessed under this criterion in terms of compliance with ARARs. Applicable requirements include cleanup standards, standards of control and other substantive environmental protection requirements, criteria or limitations promulgated under Federal or state laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location or other circumstances at a CERCLA site.

Relevant and appropriate requirements address problems or situations sufficiently similar to those encountered at a CERCLA site that their use is well suited to the environmental and technical factors at a particular site. ARARs are grouped into these three categories:

- Chemical-Specific ARARs are health or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in establishment of the amount or concentration that may be found in, or discharged to, the environment.
- Location-Specific ARARs restrict the concentration of hazardous substances or the conduct of activities solely because they are in specific locations such as flood plains, wetland, historic places, and sensitive ecosystems or habitats.
- Action-Specific ARARs are usually technology or activity-based requirements or limitations on actions taken with respect to hazardous wastes.

A summary evaluation of Federal and State ARARs pertinent to this remedial action is provided in Table 2-1 at the end of Section 2.0 and a narrative discussion of compliance with ARARs is provided below for the alternatives considered.

#### **Alternative 1 (No Action):**

The No Action alternative does not comply with State solid waste landfill closure requirements. The OU-6 RI concluded that ground water has not been adversely affected and was not a potential transport pathway; therefore ground water ARARs at the OU are met. No permits are required for this alternative. Alternative 1 does not meet the remedial action objectives for OU-6. An action would not be taken to prevent human contact with surface-soil contaminants and potential contaminants within the landfill may leach to the ground water.

#### **Alternative 2 (Institutional Controls):**

Alternative 2 does not comply with State of South Dakota solid waste landfill closure requirements. the OU-6 RI concluded that ground water has not been adversely affected and was not a potential transport pathway; therefore ground water ARARs at the OU are met. No Federal or State permits are required for this alternative. Alternative 2 does not meet the remedial action objectives for OU-6.

#### **Alternative 3 (Capping):**

Alternative 3 will meet State of South Dakota Waste Management Regulations for the disposal of solid waste by providing containment of landfill contents, access/development restrictions, and long-term monitoring. Information from the remedial investigation indicates that approximately one to two feet of cover material exists over the landfill. The exact cover thickness throughout the entire landfill are unknown. The State requires a minimum of two feet of cover material. Additional cover material (a minimum of one foot in depth) will be added under this alternative to achieve compliance with the State requirements. The State is Federally authorized for the Resource Conservation and Recovery Act (RCRA) Subtitle D Municipal Solid Waste Program (8 October 1993, 58 FR 52486). The resulting cover will also ensure continued compliance with the Safe Drinking Water Act Maximum Contaminant Levels (MCLs) by preventing the downward transport of contaminants to the ground water.

Section 404 of the Clean Water Act (CWA) regulates the discharge of dredge or fill material into waters of the United States. Section 404 is implemented through regulations set forth at 33 CFR parts 320 through 330 and 40 CFR Part 230. To fully cover the landfill, the wetlands near the storm drain discharge points must be filled. This may adversely affect a water of the United States. The Executive Order on Protection of Wetlands (E.O. No 11,990) requires Federal Agencies to avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands if a practical alternative exists. If the discharge of fill material into a water body cannot be avoided, the use of appropriate and practicable mitigation measures to minimize the adverse impact to the aquatic ecosystem will be required. Appropriate mitigation measures may be implemented during the remedial action. If wetlands at OU-6 will be adversely affected, an alternate area will be chosen for construction of a new wetland for the mitigation purposes. This ARAR will be met.

Implementation of the presumptive remedy (containment by capping) strategy for landfills has been shown by EPA to meet the remedial action objectives by preventing direct contact with landfill contents and ingestion of surface soils and sediments.

### **2.8.3 Long-Term Effectiveness and Permanence**

The assessment of this criterion considered the long-term effectiveness of alternatives in maintaining protection of human health and the environment after response action objectives have been met.

Alternative 1 would not provide additional effectiveness or permanence in reducing the potential for direct contact or ingestion of the surface soil or sediment. No further controls for the OU would be developed under this alternative.

Alternative 2 would provide for increased effectiveness of access restrictions (in addition to the general EAFB access restrictions). Additionally, vegetation maintenance would reduce erosion potential. Permanency and reliability of these controls would be enhanced through long-term monitoring and maintenance of the OU. Uncertainties exist for the ability to provide long-term access restrictions.

Alternative 3 would offer the highest level of long-term effectiveness. Reduction of risk would be accorded by the soil cap. Erosion would be limited by the development and maintenance of a vegetated area. Upon completion, long-term maintenance of the cover and monitoring of ground water would be provided. Future land uses will be allowed for the landfill only if the integrity of the landfill cover is not compromised.

### **2.8.4 Reduction of Toxicity, Mobility, and Volume Through Treatment**

The assessment of this criterion involves considering the anticipated performance of specific treatment technologies an alternative may employ.

Alternative 1 would not provide for the reduction of toxicity, mobility, or volume of the chemicals of concern in the surface soil and sediment. Alternative 2 would reduce the mobility of contaminants in surface soils through long-term erosion maintenance of existing cover soils. Alternative 3 does not use treatment technologies, but reduces the mobility of the contaminants in surface soils in the landfill area through containment.

### **2.8.5 Short-term Effectiveness**

The assessment of this criterion the effectiveness of alternatives in maintaining protection of human health and the environment during the construction of a remedy until response action objectives have been met.

It is not anticipated that the proposed alternatives would significantly impact worker or community health and safety during the implementation period. Alternatives 2 and 3 may impact community and worker health and safety through dust emissions during the initial construction phase. The impact could be minimized through dust mitigation.

Alternatives 2 and 3 may create a short-term increase in risk during remedial activities due to the inhalation exposure pathway. Disturbance of surface soil through earthwork and soil disturbance would result in exposure to workers. Dust mitigation during these activities would minimize this potential impact. Alternative 3 would present the potential for temporarily increasing the opportunity for erosion of the disturbed soils, although erosion and sediment control measures will help to minimize this adverse impact.

### **2.8.6 Implementability**

The assessment of this criterion considers the administrative and technical feasibility of implementing the alternatives and the availability of necessary goods and services for implementation of the response action.

Alternative 1 would not be difficult to implement since, aside from long-term monitoring using existing monitoring wells, no further action would be undertaken.

Alternative 2 requires no special or unique activities and could be implemented using locally available materials and contractors. Long-term monitoring would indicate whether additional action would need to be implemented in the future.

Alternative 3 could be implemented with standard construction equipment, materials, and methods. The availability of an on- or off-Base supply of cover material will require further consideration during the Remedial Design Analysis. Wetlands mitigation (as a result of drainageway modifications) could also be implemented with standard construction equipment, materials, and methods. Land use (or deed)

restrictions can be implemented at EAFB by various administrative means.

#### **2.8.7 Cost**

The assessment of this criterion considers the capital and operation and maintenance (O&M) costs associated with each of the alternatives. Alternatives are evaluated for cost in terms of both capital costs and long-term O&M costs necessary to ensure continued effectiveness of the alternatives. Capital cost include the sum of the direct capital costs (material and labor) and indirect capital costs (engineering, licenses, permits). Long-term O&M costs include labor, materials, energy, equipment replacement, disposal, and sampling necessary to ensure the future effectiveness of the alternative. The objective of the cost analysis is to eliminate those alternatives that do not provide measurably greater protection of human health and the environment for additional costs that may be incurred.

A summary of the costs for each alternative is as follows:

##### Alternative No. 1 (No action)

Total Capital Costs	\$0
Total Annual (Sampling/Analysis Costs	\$13,500
30-Year Present Value for Annual Costs	\$93,700
Annual Cost = \$13,500	
Years = 30	
Discount Rate = 5%	
TOTAL 30 Year Present Value	\$93,700

##### Alternative No. 2 (Institutional Controls)

Total Capital Costs	\$48,300
Total Annual (Sampling/Analysis/O&M) Costs	\$25,000
30-Year Present Value for Annual Costs	\$173,500
Annual Cost = \$25,000	
Years = 30	
Discount Rate = 5%	
TOTAL 30 Year Present Value	\$221,800

##### Alternative No. 3 (Capping)

Total Capital Costs	\$505,000
Total Annual (Sampling/Analysis/O&M) Costs	\$25,000
30-Year Present Value for Annual Costs	\$173,500
Annual Cost = \$25,000	
Years = 30	
Discount Rate = 5%	
TOTAL 30 Year Present Value	\$678,500

#### **2.8.8 State Acceptance**

The assessment of this criterion considered the State's preference for or concerns about the alternatives.

The State concurs with the selected remedy. The State provided comments on the remedial investigation, feasibility study, Proposed Plan, and this ROD. After incorporating adequate responses to the comments into the respective documents, the State concurred with the remedy.

### **2.8.9 Community Acceptance**

Comments offered by the public were used to assess the community acceptance of the proposed alternative. The community expressed their concerns about the selected remedy during the public comment period. The questions and concerns of the community are discussed in detail in the Responsiveness Summary which is Appendix B of the ROD.

### **2.9 SELECTED ALTERNATIVE**

Based on the requirements of CERCLA, comparative analysis of the nine criteria, public comments, and in consultation with EPA and the State, the Air Force has determined that the selected alternative is Alternative 3, Capping. This alternative includes institutional controls in conjunction with physical modification of the OU to reduce potential risk. Five-year review of the remedy will be required because potential contaminants will remain at OU-6 following completion of remedial action. Major components of Alternative 3 are:

- Installation of fencing to control physical access to the landfill area. Posting the area to indicate the landfill is closed to further use.
- Implementing institutional controls (deed and land use restrictions) to prevent future use of the area for residential use and/or limiting its use to industrial uses.
- Providing a minimum of one foot of suitable earthen cover over the area of attainment (approximately seven acres).
- Grading and contouring the area to maintain stability and route surface water precipitation away from previously active fill areas and prevent ponding of the water.
- Extending an existing stormwater drain to the south and east of the landfill area to prevent the erosion of fill material and future potential contact with contaminated sediment.
- Providing and maintaining suitable vegetation to enhance evapotranspiration and reduce infiltration and soil erosion.
- Mitigating any wetlands affected by placement of the cap.
- Providing for long-term ground-water, surface-water, and sediment monitoring at the OU to identify development of future risks associated with the OU. Providing long-term maintenance of the remedial actions taken at the OU.

This alternative will meet the remedial action objectives and reduce the potential risk for OU-6 by preventing future exposure to contaminants in the surface soils and by reducing the mobility of potential contaminants in the landfill. This will be achieved by the construction of the landfill cap and maintenance and modification of stormwater drainageways.

This alternative meets the statutory requirements of Section 121 of CERCLA as amended by SARA. These statutory requirements include protectiveness of human health and the environment, compliance with ARARs, cost effectiveness, and use of permanent solutions and alternative treatment technologies to the extent practicable.

The statutory preference for treatment is not satisfied; however, the selected alternative is the presumptive remedy (containment) developed by EPA for landfills.

Alternative 3 would achieve significant risk reduction by limiting exposure to landfill materials and to contaminants present in surface soils and sediment at the OU. The selected alternative will be protective of human health and the environment and will comply with ARARs.

### **2.10 STATUTORY DETERMINATIONS**

The selected remedy meets the statutory requirements of CERCLA as amended by SARA. These requirements include protection of human health and the environment, compliance with ARARs, cost effectiveness, utilization of permanent solutions and alternative treatment technologies to the extent practicable. Containment, by definition, does not attempt to reduce the toxicity or volume of potentially hazardous materials; rather, it reduces the likelihood of exposure to these materials by preventing the movement of materials beyond the boundaries of the landfill and preventing direct contact with landfill materials.



The selected remedy represents the best balance of tradeoffs among the alternative considered, with respect to pertinent criteria, given the scope of the action.

The manner in which the selected remedy meets each of these requirements is discussed in the sections below.

#### **2.10.1 Protection of Human Health and the Environment**

The selected remedy addresses health and environmental issues that were identified in the OU-6 RI report. Specifically, the capping alternative:

- Eliminates exposure to landfill contents by installing an earthen cap.
- Reduces the potential infiltration of contaminants to the ground water.
- Prevents unauthorized access to the area by installing a perimeter fence and restricted access signs.
- Provides for long-term monitoring of ground water identify potential future risks associated with OU-6.

#### **2.10.2 Compliance with ARARs**

Alternative 3 will meet State landfill closure requirements by providing containment of landfill contents, access/development restrictions and long-term monitoring. The OU-6 RI concluded that ground water has not been adversely affected and was not a potential transport pathway; therefore ground water ARARs at the OU are met. Wetlands adversely affected by the remedial activities may need to be mitigated. Additional information about ARAR compliance is contained in Section 2.8.2.

Implementation of the presumptive remedy (containment by capping) strategy for landfills has been shown by EPA to meet the remedial action objectives by preventing direct contact with landfill contents and ingestion of surface soils and sediments.

#### **2.10.3 Cost Effectiveness**

The selected remedy provides overall effectiveness in reducing human health risks relative to its costs. The presumptive remedy process insures cost effective remedies are chosen. The chosen landfill cover type ensures containment of the landfill contents. Site specific conditions were used to determine the type of cover necessary for the landfill. Based on the information provided during the remedial investigation, a more costly landfill cover would not be cost effective.

#### **2.10.4 Utilization of Permanent Solutions and Alternative Treatment Technologies to the Extent Possible**

EPA has established that proper capping has proven effective in containing landfill contents. This alternative provides long-term prevention of exposure to potential landfill material, prevents unauthorized access, and provides for long-term ground water monitoring to detect movement of chemicals from the area. A five-year review of the selected remedy will be performed due to the uncertainty of the landfill contents. The review will be conducted five years after the commencement of the remedial action to ensure the remedy continues to provide adequate protection of human health and the environment.

#### **2.10.5 Preference for Treatment as a Principal Element**

Treatment of the landfill contents is not supported based on the findings of the remedial investigation for OU-6. No identifiable hot spots were reported present and the risks associated with OU-6 can be addressed by eliminating exposure to the landfill contents by capping.

### **2.11 DOCUMENTATION OF SIGNIFICANT CHANGES**

The selected action is the same as the preferred alternative presented in the Proposed Plan for OU-6 remedial action. There have been no changes relative to the Proposed Plan.

TABLE 2-1 EVALUATION OF FEDERAL AND STATE ARARS THAT APPLY TO OU-6, ELLSWORTH AFB, SOUTH DAKOTA

Applicable or Relevant and Appropriate Federal Standards, Requirements, Criteria and Limitations

Standard, Requirement, Criteria or Limitations	Citations	Description	ARAR Type	Applicability
Safe Drinking Water Act	42 USC 300, f, g			
National Primary Drinking Water Standards	40 CFR Part 141	Establishes health based standards for public water systems (maximum contaminant levels)	Chemical	Relevant and appropriate for federal Class II aquifers.
National Secondary Drinking Water Standards	40 CFR Part 143	Establishes aesthetic based standards for public water systems (maximum contaminant levels)	Chemical	Relevant and appropriate.
Maximum Contaminant Level Goals	Public Law No. 99-330, 100 Stat. 642 (1986)	Establishes drinking water quality goals set at concentrations of unknown or anticipated adverse health effects with an adequate margin of safety	Chemical	Relevant and appropriate.
Clean Water Act	33 USC 1251-1376			
Water Quality Criteria	40 CFR Part 131	Establishes criteria for water quality based on toxicity to aquatic organisms and human health	Chemical	Relevant and appropriate. Aquifer may be federal Class II A (discharge to surface water).
Criteria and Standards for the National Pollutant Discharge Elimination System	40 CFR Part 125	Establishes criteria and standards for technology-based requirements in permits under the Clean Water Act	Chemical	Relevant and appropriate.
Toxic Substances Control Act	40 CFR Part 761	Substances regulated include, but are not limited to, soils and other materials contaminated as a result of spills	Action	Applicable.
Archaeological and Historic Preservation Act	16 USC 469 40 CFR Part 6.301 (c)	Establishes procedures to provide for preservation of historical and archaeological data which might be destroyed through alteration of terrain as a result of a federal construction project for a federal licensed activity or program	Location	Applicable. OU-6 was used for landfilling activities. No known historic or archaeological value, although no confirmation study has been performed. Applicability will be determined during RD.

TABLE 2-1 EVALUATION OF FEDERAL AND STATE ARARS THAT MAY APPLY TO OU-6, ELLSWORTH AFB, SOUTH DAKOTA  
(Continued)

Potentially Applicable or Relevant and Appropriate Federal Standards, Requirements, Criteria and Limitations

Standard, Requirement, Criteria or Limitation	Citations	Description	ARAR Type	Applicability
Executive Order on Protection of Wetlands	E. O. No. 11,990 40 CFR 6.302(a) & Appendix A	Requires federal agencies to avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands if practicable alternative exists	Action/Location	Applicable.

Applicable or Relevant and Appropriate State Standards, Requirements, Criteria and Limitations

South Dakota Waste Management Regulations	74:26:03:04	Establishes requirements for disposal of hazardous wastes in sanitary landfills	Action	Relevant and appropriate.
South Dakota Waste Management Regulations	74:27:03:11	Defines requirements for closure of solid waste disposal facilities	Action	Relevant and appropriate.
South Dakota Waste Management Regulations	74:27:09:06	Defines criteria for permit applications for other solid waste TSD facilities	Action	Relevant and appropriate.
South Dakota Waste Management Regulations	74:27:15	Establishes standards for landfill closure and post-closure monitoring	Action	Relevant and appropriate.
South Dakota Water Quality Standards	74:03:04:02, 10	Defines use of Box Elder Creek and certain tributaries	Action	Relevant and appropriate.
South Dakota Ground Water Standards	74:03:15	Defines ground water classifications by beneficial use and sets chemical standards	Chemical	Relevant and appropriate.
South Dakota Ground Water Quality Standards	74:03:02	Establishes surface water quality standards.	Chemical	Relevant and appropriate.
South Dakota Remediation Criteria for Petroleum-Contaminated Soils	74:03:32	Establishes requirements for the remediation of soil contaminated with petroleum products.	Chemical	Relevant and appropriate.

### 3.0 LIST OF ACRONYMS AND ABBREVIATIONS

ACC:	Air Combat Command
AF:	Air Force
AFB:	Air Force Base
ARARS:	Applicable or Relevant and Appropriate Requirements
CERCLA:	Comprehensive Environmental Response, Compensation and Liability Act
COC:	Chemicals of Concern
DNAPL:	Dense non-aqueous phase liquid
EAFB:	Ellsworth Air Force Base
EP:	Extraction Procedure, the EPA's standard laboratory procedure for leachate generation.
EPA:	Environmental Protection Agency
FFA:	Federal Facilities Agreement
FPTA:	Fire Protection Training Area
FTA:	Fire Training Area
GPR:	Ground Penetrating Radar
HQ:	Headquarters
IN SITU:	In the original place.
IRIS:	Integrated Risk Information System
IRP:	Installation Restoration Program
JP-4:	Jet Propulsion Fuel Number Four; contains both kerosene and gasoline fractions.
LNAPL:	Light Non-Aqueous Phase Liquid
MCL:	Maximum Contaminant Levels
mgd:	Million Gallons per Day
µg/l:	Micrograms per liter
mg/l:	Milligrams per liter
MSL:	Mean Sea Level
NAPL:	Non Aqueous Phase Liquid
NCP:	National Oil and Hazardous Substances Contingency Plan
NEPA:	National Environmental Policy Act
NPDES:	National Pollutant Discharge Elimination System
NPDWR:	National Primary Drinking Water Regulations
NPL:	National Priorities List
OU:	Operable Unit
O&G:	Symbols for oil and grease
PAH:	Polynuclear Aromatic Hydrocarbon
PCB:	Polychlorinated Biphenyl; liquids used as a dielectrics in electrical equipment
PCE:	Perchloroethylene: liquids used in degreasing or paint removal.
PL:	Public Law
ppm:	Parts per million by weight
RCRA:	Resource Conservation and Recovery Act
RI/FS:	Remedial Investigations/Feasibility Study
SARA:	Superfund Amendments and Reauthorization Act
SACM:	Superfund Accelerated Cleanup Model
SVOC:	Semivolatile Organic Compound
TCA:	1,1,1,-tetrachloroethane
TCE:	Trichloroethylene
TCL:	Target Compound List
TCLP:	Toxicity Characteristic Leaching Procedure
TDS:	Total Dissolved Solids
TOC:	Total Organic Carbon
TSD:	Treatment, storage or disposal sites/methods
USAF:	United States Air Force
U.S. EPA:	United States Environmental Protection Agency
USDA:	United States Department of Agriculture
USFWS:	United States Fish and Wildlife Service
USGS:	United States Geological Survey
VES:	Vertical Electrical Sounding
VOC:	Volatile Organic Compound
WQC:	Water Quality Criteria
WWTP:	Wastewater Treatment Plant

## APPENDIX A

### FIGURES

<IMG SRC 0896114A>  
<IMG SRC 0896114B>  
<IMG SRC 0896114C>  
<IMG SRC 0896114D>  
<IMG SRC 0896114E>

## **APPENDIX B**

### **Responsiveness Summary Remedial Action at Operable Unit Six Ellsworth Air Force Base, South Dakota**

#### **1. Overview**

The United States Air Force (USAF) established a public comment period from July 6, 1995 to August 5, 1995 for interested parties to review and comment on remedial alternatives considered and described in the Proposed Plan for Operable Unit Six (OU-6). The Proposed Plan was prepared by the USAF in cooperation with the U.S. Environmental Protection Agency (USEPA) and the South Dakota Department of Environmental and Natural Resources (SDDENR).

The USAF also held a public meeting at 7:30 p.m. on July 25, 1995 in the 28th Bomb Wing Auditorium at Ellsworth Air Force Base (EAFB) to outline the proposed remedy to reduce risk and control potential hazards at the Operable Unit (OU).

The Responsiveness Summary provides a summary of comments and questions received from the community at the public meeting and during the public comment period as well as the USAF's responses to public comments.

The Responsiveness summary is organized into the following sections:

- Background on Community Involvement
- Summary of Comments and Questions Received During the Public Comment Period and USAF Responses
- Remaining Concerns

#### **2. Background on Community Involvement**

On August 30, 1990 EAFB was listed on the USEPA's National Priorities List (NPL). A Federal Facilities Agreement (FFA) was signed in January 1992 by the Air Force, EPA, and the State and went into effect on April 1, 1992. The FFA establishes a procedural framework and schedule for developing, implementing, and monitoring appropriate response actions for EAFB.

Community relations activities that have taken place at EAFB to date include:

- FFA process. After preparation of the FFA by the USAF, EPA, and SDDENR, the document was published for comment. The FFA became effective April 1, 1992.
- Administrative Record. An Administrative Record for information was established in Building 8203 at EAFB. The Administrative Record contains information used to support USAF decision-making. All the documents in the Administrative Record are available to the public.
- Information repositories. An Administrative Record outline is located at the Rapid City Library (public repository).
- Community Relations Plan (CRP). The CRP was prepared and has been accepted by EPA and the State of South Dakota and is currently being carried out. An update to this plan will be prepared in 1995.
- Restoration Advisory Board (RAB). The RAB has been formed to facilitate public input in the cleanup and meets quarterly. In addition to USAF, EPA, and South Dakota oversight personnel, the RAB includes community leaders and local representatives from the surrounding area.
- Mailing list. A mailing list of all interested parties in the community is maintained by EAFB and updated regularly.
- Fact sheet. A fact sheet describing the status of the IRP at EAFB was distributed to the mailing list addresses in 1992.

- Open house. An informational meeting on the status of the IRP and other environmental efforts at EAFB was held on May 6, 1993.
- Newspaper articles. Articles have been written for the base newspaper regarding IRP activity.

The Proposed Plan for this remedial action was distributed to the mailing list addresses for their comments and additional copies of the Proposed Plan were available at the July 25, 1995 public meeting. A transcript of comments, questions and responses provided during the public meeting was prepared.

### **3. Summary of Comments and Questions Received During the Public Comment Period and USAF Responses**

#### **Part I - Summary and Response to Local Community Concerns**

Review of the written transcript of the public meeting did not indicate community objections to the proposed remedial action. No written comments were received during the public comment period.

The majority of the comments received during the public meeting were in the form of questions about the remedial action; i.e., what would be done, how it would be done, and what effects the action might have. Representatives of the USAF were available to provide answers to the questions and also provided an overview presentation during the meeting to describe the proposed actions.

#### **Part II - Comprehensive Response to Specific Technical, Legal and Miscellaneous Questions**

The comments and questions below have been numbered in the order they appear in the written transcript of the July 25, 1995 public meeting.

Comment 1. Marie Chirrel

Asked if anything could be built or constructed on OU-6 during the 30-year monitoring period.

Response 1: Conditions at the site are subject to a five-year review after the remedial action is completed to ensure the remedy remains effective. If the remedy remains effective, the property could potentially be used for some limited activities in the future. Implementation of institutional controls, as part of the proposed remedy, would ensure only limited activities would take place at OU-6.

Comment 2. Jan Deming

Asked about the status and purpose of the two stormwater drains

Response 2: The northern-most of the two drains is abandoned and no longer in use. The southerly drain collects stormwater from areas west of the landfill. This drain line would be extended farther to the southeast, past the landfill area that would receive additional soil cover. The drain line would continue to be used and would drain into the existing drainage swale, which flows to the south and east.

Comment 3. Phyllis Engelman

Stated that the active storm drain line drains water from the fuel-storage area to the west and toward areas off-Base and to the southeast. Asked if there would be any danger from future fuel spills.

Response 3: The drain will function in much the same way as it does now after it is extended. If there is a fuel spill, it is possible but unlikely that spilled material would travel off-Base. It is more likely to be contained by the Base spill response team and not leave Base property.

Comment 4. Lincoln Crum

Asked if the stormwater would still flow to the east so property to the west would not be affected.

Response 4: It will still flow to the east as it does now. Nothing that will be done at the landfill would affect property to the west.

Comment 5. Lincoln Crum

Asked about a possible increase in the amount of soil erosion and about what kind of grass would be grown there, suggesting newer varieties of wheat grass be considered.

Response 5:

The additional soil cover would be graded, compacted, tilled and seeded so that the area will look much the same as it does now. Decisions about what type of grass seed to use will be made in the near future.

#### **4. Remaining Concerns**

Based on review of the transcript of the oral comments received during the public meeting, there are no outstanding issues associated with implementation of the proposed remedial action.